

#INNOVATION

Making Water From Hot Air

A new molecularly engineered hydrogel that can create clean water using just the energy from sunlight.



A new molecularly engineered hydrogel that can create clean water using just the energy from sunlight. The researchers were able to pull water out of the atmosphere and make it drinkable using solar energy, in conditions as low as 104 degrees, aligning with summer weather in Texas and other parts of the world.

That means people in places with excess heat and minimal access to clean water could someday simply place a device outside, and it would make water for them, with no additional effort necessary.

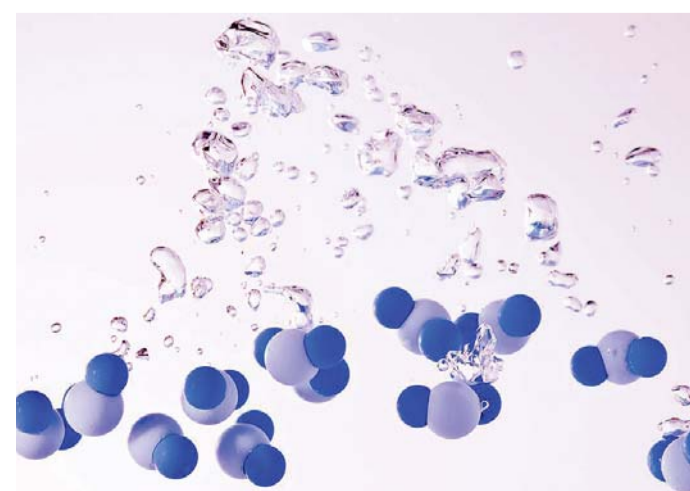
"With our new hydrogel, we're not just pulling water out of thin air. We're doing it extremely fast and without consuming too much energy," says Guihua Yu, a materials science and engineering professor in the Cockrell School of Engineering's Walker Department of Mechanical Engineering and Texas Materials Institute at the University of Texas at Austin.

"What's really fascinating about our hydrogel is how it releases water. Think about a hot Texas summer—we could just use our temperatures' natural ups and downs, no need to crank up any heaters."

The device can produce between 3.5 and 7 kilograms (about 7.7 lbs to 15.4 lbs) of water per kilogram of gel materials, depending on humidity conditions.

A significant feature of this research is the hydrogel's adaptability into microparticles called "microgels." These microgels unlock the speed and efficiency improvements that bring this device much closer to reality.

"By transforming the hydrogel into micro-sized particles, we can make the water capture and release ultra-fast," says Weixin Guan, a graduate student in Yu's lab



and one of the lead authors of the study, published in the Proceedings of the National Academy of Sciences.

"This offers a new, highly efficient type of sorbents that can significantly enhance the water production by multiple daily cycling."

The researchers are pursuing additional improvements to the technology with an eye toward transforming it into a commercial product. One focus area is optimizing the engineering of the microgels to further improve efficiency.

Scaling up is an important next step. The researchers aim to translate their work into tangible and scalable solutions that can be used worldwide as a low-cost, portable method of creating clean drinking water. This could be life-changing for countries such as Ethiopia, where almost 60% of the population lacks basic access to clean water.

"We developed this device with the ultimate goal to be available to people around the world who need quick and consistent access to clean, drinkable water, particularly in those arid areas," says Yaxuan Zhao, a graduate student in Yu's lab.

The team is working on other versions of the device made from organic materials, which would reduce costs for mass production. This transition to more commercially viable designs comes with its own challenges in scaling production of the sorbent that allows moisture absorption and in maintaining durability for the product's lifespan.

Research is also focused on making the devices portable for various application scenarios.

The Norman Hackerman Award in Chemical Research from the Welch Foundation and the Camille Dreyfus Teacher-Scholar Award funded the work.

Politics in the country as a "great Indian nautanki" PART-2

Neerja Chowdhury's newly released book, *How Prime Ministers Decide*, can easily grip a reader's attention if they sink their teeth in deep enough. And while the book itself can tell you a lot about the political dynamic of our country, it also lets you take a peek into the writer herself.



In her interview with *Arbitrage*, Neerja Chowdhury sheds some light on how hard work and credibility are two very important resources to have for every good journalist - how having multiple sources, doing a "lot of legwork", checking the accuracy of a piece of information and winning peoples' trust actually pays off in making your mark, even if getting the due recognition may take some time.

Being a woman in journalism

Throughout her career, Neerja Chowdhury has authored numerous pieces that shed light on pressing social, political, and cultural issues, including in-depth analyses of electoral dynamics, interviews with political leaders, and compelling narratives that brought marginalized voices to the forefront of public consciousness. Her writings have often challenged the status quo and questioned conventional wisdom, urging readers to contemplate and engage in critical discourse.

But the path was not very easy. Chowdhury has faced numerous challenges in her journalistic journey, from tackling censorship issues and navigating the political complexities of her time to prejudice. These experiences have made her an important voice when it comes to the discourse of women often being held back in the field of journalism. While discussing the lack of women in the topmost leadership roles in media organisations (such as editor-in-chief) during her interview with *NewsLaundry*, Chowdhury shared that she believes this issue could be investigated in a study, which may help understand what keeps women journalists from reaching the top - whether it is the cost such roles could levy on what they value or whether there is a prevalent prejudice in the system.

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During the release of her book, which took place at the Prime Ministers' Museum and



Former prime minister Rajiv Gandhi is one of the leaders whom veteran journalist Neerja Chowdhury covered in her newly released book, *How Prime Ministers Decide*. (Image source: Ministry of Information and Broadcasting)

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Writing How Prime Ministers Decide

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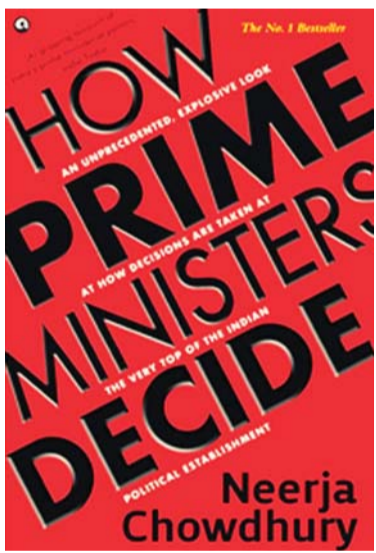
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#NEERJA CHOWDHURY



The launch of veteran journalist Neerja Chowdhury's newly released book, *How Prime Ministers Decide*, took place at the Prime Ministers' Museum and Library Society in Delhi's Teen Murti Bhavan. (Image courtesy: Aleph Book Company/Writer)



The cover of veteran journalist Neerja Chowdhury's newly released book, *How Prime Ministers Decide*.

Library Society in Delhi's Teen Murti Bhavan. Chowdhury noted how she had originally considered writing on demonetisation. However, she eventually decided to not pursue this idea as she believed that she would not be able to gather the required information on the subject. At the same launch event, she also described the landscape of poli-

tics in the country as a "great Indian nautanki".

Chowdhury wrote her book, which dives into the intricate dynamics within India's power corridors, by harnessing the experience and knowledge she has gleaned in her 40-plus years as a journalist and political analyst. Sharing her experience of working with David Davidar, the founder of Aleph Book Company, Chowdhury said at the Prabha Khaifan Foundation discussion that Davidar put her on a "punishing schedule" to finish the book. But, she added, that he had more faith in the book than even she did.

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Published in July this year, senior journalist Neerja Chowdhury's new book, *How Prime Ministers Decide*, offers a profound exploration into the inner workings and strategic decision-making processes of six prime ministers of India - namely, Indira Gandhi, Rajiv Gandhi, VP Singh, Pamulaparthi Venkata Narasimha Rao (popularly known as PV Narasimha Rao), Atal Bihari Vajpayee and Manmohan Singh. She mentioned at the event that one of the reasons she picked these six prime ministers was that she got to speak with the people who were around them after they stepped down from this position. Therefore, these people felt more comfortable speaking to her.

Her inspiration behind writing *How Prime Ministers Decide* was the keen realisation that the real picture of how our leaders worked - the pressures, the machinations, etc. that existed behind the scenes - was not known to the ordinary people. And the target audience of her book was the millennials.

Concluded.

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The Way Politics Is Played... In India

In Conversation with Neerja Chowdhury

During the Emergency, I came into the *Himmat* magazine, which Rajmohan Gandhi was running. That was a very exciting period. Many of the smaller magazines put up a fight at that time. We were hounded, from press to press, because the pressure would come on the printing press to not print *Himmat*. Finally, we appealed to our readers to send us money. I remember we had a chart on the wall and it was so exciting to watch the graph climb every day. We would get so many one-rupee money orders. We collected Rs 70,000 and bought a small printing press to print *Himmat*. That's where I cut my teeth in journalism. Unfortunately, *Himmat* closed down in 1980 because there wasn't the money to run it. *Himmat* stood up to the forces of authoritarianism, but it couldn't stand up to the forces of the market.

#POLITICS

You've talked about how the target audience of this book is the millennials. Why specifically millennials?

In India today, 65% of the population is under 35. We talk about what happened in 1991 - the opening up of the Indian economy, which has changed India. The India of 2023 is not the India of 1991 on the economic front. Things that are available to the younger generation and they take for granted were not available then. In 1992, when the Babri Masjid was brought down, it was a milestone moment which shaped India's psyche, it shaped India's future politics.

When these momentous events were taking place, the 65% that I'm talking about were either infants, very young or were not born. They are not familiar with all this. And that doesn't mean that they're not interested in what happened. I find a lot of young people are interested in going back into history. When I thought of writing this book, my generation would read it with interest because it's like going down memory lane. But I really wanted to have the millennials, the younger people read it and connect to the present to the past, and therefore look at the future. When I decided to write, I didn't want to write in an academic way. I'm not an academic anyway. I wanted to write it the way politics is played out, which is drama, which is suspense.

You have been a journalist for over four decades, and you've covered so many different issues. What inspired you to focus on Prime Ministers, particularly for this book?

As I did political coverage over the years, I realised that decision-making at the top was an area which people didn't know much about. What the ordinary person outside felt...the reality was very different. Ordinary people think the prime minister of the country is all-powerful. He or she can do anything. But the reality is, they are subjected to pulls and pressures, machinations, manipulations, the need for survival, opponents out to get them; pressures from the ground, the community, lobbies, and pressures from outside the country. They have to navigate what is a minefield and take decisions in the midst of this. There are personal upheavals and turbulence. So I felt this was a story that needed to be told. Not just the stories about prime ministers, interesting as that is, but how decisions are made at the top of the political pyramid. It just fascinated me, and I thought I would look at it.

I saw one of your interviews where you talked about how the political scene is like a nautanki - like a big, drama and suspense.

Indian politics is a big nautanki. Having covered it for almost four decades, there was never a dull moment. No one day is like the previous day. You don't know what's going to happen. Today, I'm sitting in a village in Goa, and people are calling up because the caste census in Bihar has been announced. This caste census happening in one state of India could have huge ripple effects all over

heartland India and beyond. What was your process like when it came to writing this book?

My process was not organised. I had done lots and lots of interviews about various subjects over the years. I had hoped to do a book, particularly about the 90s, which I followed very closely, but I didn't know what shape it would take. So whoever I met for interviews, I would take copious notes, whether it was for the day's story or not, whether it was formal or informal. I saved these notes and kept them very carefully.

In 2018, I signed up with Aleph Publishing Company. I thought the book would be like writing 2,000 articles. But that's not the way the process goes. And the structure of the book was the most difficult part.

The writing part actually happened in the COVID years. I don't know, where those years went [laughs]. I have no memory of the COVID years except for the deadlines, the writing of the book, and intensely living with it. My life was like a triangle during that time. I went from my computer table to my bed to the dining table and for the occasional walk on the terrace.

It was very exciting for me to discover the treasures I had. Apart from the old interviews and the scores of thick notebooks (more than scores) that I pulled out, I did further interviews when I discovered where the gaps were. I also worked on other issues also and it helped me learn a lot about India. I realised that politics was all-pervasive and I wanted to write about it. I got a chance to do that at *The Indian Express*. I started by covering the rise of VP Singh after he'd left the Congress party and floated his Jan Morcha. It was a very exciting time in Indian politics.

I went on to become the political editor at *Express*, then the political editor of the *Economic Times*. Eventually, I came back to *The Indian Express*. After that, I worked as a freelance journalist writing about politics, which I continue to do to this day - and I'm the contributing editor for *The Indian Express*.

What was the process of pruned through all the information you had?

Once I was clear that I wanted to write about how prime ministers decide, I decided on six prime ministers, six decisions by them, and how these decisions were made. Then, I knew what was relevant and what was not. Of course, I had many more conversations that I was unable to bring into the book. Also, I wanted the conversations to tell the story.

You have talked about how your journey in journalism started accidentally. What inspired this journey?

When I was finishing school, I used to say that I wanted to be able to write. Then, I went into architecture. During the Emergency, I came into the *Himmat* magazine, which Rajmohan Gandhi was running. That was a very exciting period. Many of the smaller magazines put up a fight at that time. We were hounded, from press to press, because the pressure would come on the printing press to not print *Himmat*. Finally, we appealed to our readers to send us money. I remember we had a chart on the wall and it was so exciting to watch the graph climb every day. We would get so many one-rupee money orders. We collected Rs 70,000 and bought a small printing press to print *Himmat*. That's where I cut my teeth in journalism.

Unfortunately, *Himmat* closed down in 1980 because there wasn't the money to run it. *Himmat* stood up to the forces of authoritarianism, but it couldn't stand up to the forces of the market.

Then I joined *The Statesman* as its Civil Rights correspondent, the first and only one to date. I spent five to six years intensively travelling through the country again. I covered a host of issues including bonded labour; child labour; under-trials, etc. I remember filing a public interest litigation on behalf of an undertrial and the judgment was given by the present chief justice's father, PV Chandrachud. It was a landmark judgment. I worked on other issues also and it helped me learn a lot about India. I realised that politics was all-pervasive and I wanted to write about it. I got a chance to do that at *The Indian Express*. I started by covering the rise of VP Singh after he'd left the Congress party and floated his Jan Morcha. It was a very exciting time in Indian politics.

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What advice would you give to young journalists who are getting disenchanted by the field?

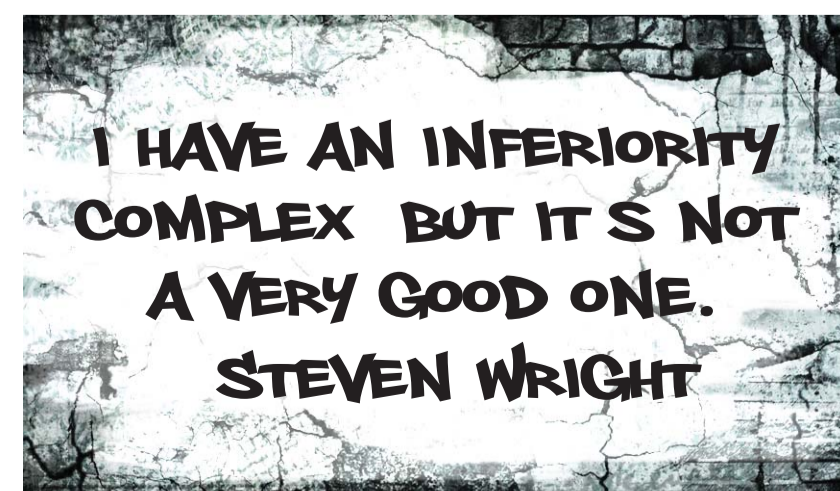
I think we in the media need to think much more deeply about where we are headed.

What advice would you give to young journalists who are getting disenchanted by the field?

That's a difficult one because I realise the difficulties they work under. But I, as an old-school journalist, believe in giving both sides of a story. Also, social media has become so overwhelming. A journalist friend of mine teaches in a government school in Gurugram where daughters of farmers, clerks, etc. study. She was telling me that she went there for the first time these young girls, about 15-17, the first question these young girls asked her was, "Do you have an Insta? They didn't even say 'Instagram'." They want to know how many followers she has! [laughs] The nature of media is changing so rapidly that sometimes I feel we will not be able to keep pace or even to fully comprehend where we are really headed.

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THE WALL



BABY BLUES



By Rick Kirkman & Jerry Scott



ZITS



By Jerry Scott & Jim Borgman

